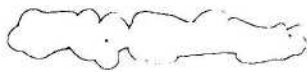


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DEPARTMENT OF NATIONAL DEVELOPMENT.  
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1962/114

REPORT ON 1961 PLANT FOSSIL COLLECTIONS.

by

Mary E. White.

The information contained in this report has been obtained by the Department of National Development, as part of the policy of the Commonwealth Government, to assist in the exploration and development of mineral resources. It may not be published in any form or used in a company prospectus without the permission in writing of the Director, Bureau of Mineral Resources, Geology and Geophysics.

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## CONTENTS

	<u>Page</u>
SUMMARY	
I. Collection from North-East Bowen Basin, Queensland.	1
II. Collection from Emerald 4-Mile Area, Queensland.	5
III. Collection from Great Artesian Basin, Queensland.	9
IV. Collections of Mesozoic Plants from the Northern Territory.	12
V. Permian Plant Remains from Mount Rymill, Antarctica.	14
VI. Fossiliferous Sample from the Tarlton Formation, Northern Territory.	14
VII. Sample from the Clarke River 4-Mile Area, Queensland.	14
SELECTED REFERENCES	15.

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REPORT ON 1961 PLANT FOSSIL COLLECTIONS

by

Mary E. White

SUMMARY

Devonian, Carboniferous and Permian (Lower and Upper Bowen) plant fossils are described from the N.E. Bowen Basin.

In the Emerald 4-mile area, Leptophloeum australe (M'Coy) occurs in the Telemon Formation. As well as the usual decortication forms of normal stems of the species, the present collection is particularly interesting as there are examples in which zones of densely crowded leaf bases, horizontally wrinkled, occur on stems. This feature is characteristic of Leptophloeum rhombicum Dawson and the identity of Leptophloeum australe and Leptophloeum rhombicum is suggested. A problematical fossil is believed to be a stem of Leptophloeum australe bearing leaves on the leaf bases in a dense "bottle-brush" arrangement. The Ducabrook and Joe Joe Formations yield Lower Carboniferous plants and a Permian shale contains a Glossopteris flora.

In the Great Artesian Basin, the Winton Formation contains Lower Cretaceous plants.

A collection of Mesozoic plants from the Northern Territory contains elements of the Lower Cretaceous flora described in Records 1961/146.

Two Permian plant fossils are described from Mount Rymill in Antarctica.

A fossiliferous sample from the Tarlton Formation, Northern Territory, is indeterminate, and a sample from the Clarke River 4-mile area in Queensland contains poorly preserved lepidodendroid fossils.

# 1. Collection from North-East Bowen Basin, Queensland.

Plant fossils were collected at 17 localities on the Bowen 4-mile Sheet and two localities on the Mackay 4-mile Sheet by the North-East Bowen Basin Party in 1961.

Details of localities and plants identified are as follows:-

## A. Bowen 4-mile Sheet.

1. Locality B 12:  $\frac{1}{2}$  mile W. of Selheim River, 3 miles East of Rutherford Table.

Collector: E.J. Malone.  
Specimens F 22015.

Casts and impressions of Leptophloeum australe (M'Coy) are present, indicating Upper Devonian age.

2. Locality B 94: 3 miles North-East of Rutherford Table.

Collector: E.J. Malone.  
Specimens F 22016

A specimen of Protolapidodendron sp. showing vertical rows of leaf bases is associated with a branching stem which is probably Psilophytalean - Psilophytites sp.?

Age determination: Devonian.

3. Locality B 127: 2 miles North-West<sup>of</sup> Bowen River Hotel.

Collector: E.J. Malone  
Specimens F 22018 - 22020 illustrated,  
F 22017 bulk of collection.

The following are identified:-

- (a) Glossopteris indica Sch. F 22018. Figure 1, Plate 1.
- (b) Equisetalean stems. F 22019. Figure 2, Plate 1.
- (c) Cordaites australis (M'Coy) F 22020. Figure 3, Plate 1

This species is recorded from Devonian and Carboniferous horizons in Australia. It is a form-species and the affinities of these broad, ribbon-like leaves are uncertain. C. australis has not been recorded from Permian strata. In specimen 22020 it is not associated with any other fossil. It is therefore possible that it represents an older horizon at the locality, as Glossopteris indica is a Permian form. Alternatively the range of Cordaites australis must be extended from Devonian/Carboniferous to Devonian - Lower Permian.

Age determination: Permian - Lower Bowen.

4. Locality B 138: East bank of Bowen River, at Bowen River Hotel.

Collector: E.J. Malone  
Specimens: F 22021 - 22023.

- (a) Glossopteris indica Sch. (F 22022) indicates Permian age.
- (b) Large seed Samaropsis dawsoni (Shirley). The sclerotesta is ovate, tapering towards the 2-lobed apex, approximately 2.5 cm. long and 1.6 cm. broad at its widest point. The wing is incomplete but seems to have been of fairly uniform width (approx. 3mm. ).

Samaropsis dawsoni has been recorded from the Lower Bowen only, not the Upper, by Walkom (1922). A large, poorly preserved seed ? was recorded from locality 1017 F in the 1960 collection from the Bowen Basin, (Records 1961/60) and referred to the species, but its identification is incorrect in the light of evidence from the present collection.

Age determination - Permian. Lower Bowen ?.

5. Locality B 206: 2 miles North of Gatton Vale.

Collector: A.R. Jensen.  
Specimens F 22024.

These specimens are very poorly preserved.  
Glossopteris indica Sch. is associated with  
Glossopteris angustifolia Bgt.?

Age determination: Permian.

6. Locality B 559: 3 miles South of junction of Rutherford Creek and Selheim River.

Specimens F 22025.

Indeterminate.

7. Locality B 572: Burdekin River, 2½ miles East from junction with Suttor River.

Collector: A.R. Jensen.  
Specimens F 22026

- (a) Impressions of Lepidodendroid stems are present in large numbers. All are decorticated and show vertically elongated leaf bases, relatively narrow for their length. Figure 4, Plate 2, illustrates an example. The tissue round the leaf bases is horizontally wrinkled. The leaf bases are arranged in ascending spirals. A surface view of leaf bases is necessary for determining the species. Therefore the specimens are referred to Lepidodendron sp.
- (b) A small fragment of a fern with dichotomising pinnules, of Rhodesa type.



PLATE 1.

North - East Bowen Basin Collection.

Figure 1. Glossopteris indica Sch.  
Specimen F 22018. Natural size.



Figure 2: Equisetalean Stem  
Specimen F 22019. Natural size.

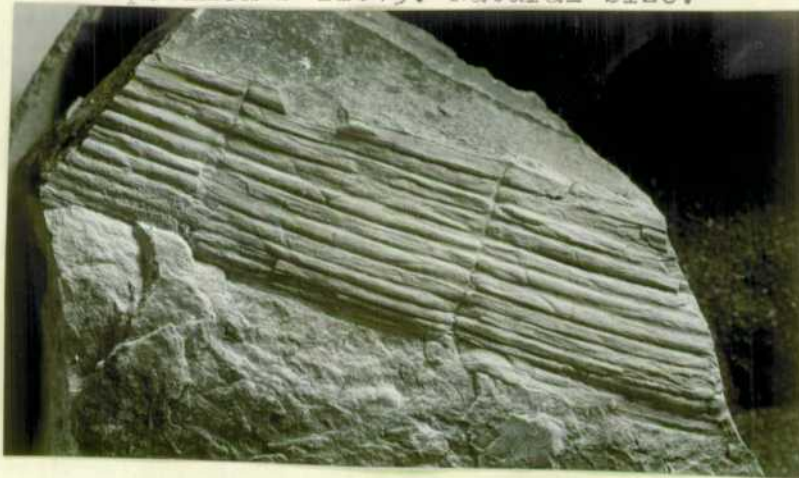


Figure 3: Cordaites australis (M'Coy)  
Specimen F 22020. Natural size.



(c) A nodal disc of a Calamite is also present.

Age determination: Lower Carboniferous.

8. Locality B 587: 3 miles south Bowen River; 3 miles west-south-west from Gatton Vale.

Collector: A.R. Jensen.

Specimens F 22027 - 22029.

The following are identified:-

- (a) Glossopteris indica Sch. (F 22027)
- (b) Glossopteris communis Feist. "
- (c) Glossopteris intermittens ? "
- (d) Glossopteris angustifolia Bgt. (F 22027)
- (e) Large scale leaf 2.5 cm from base to pointed apex, 1.8 cm. across base, tapering to apex. Venation gangamopteroid. Figure 5, Plate 2 of specimen F 22029 illustrates this scale superimposed on G.indica and G.angustifolia.
- (f) Glossopteris conspicua Feist.

Age determination: Permian - Upper Bowen  
(G.conspicua is an Upper Bowen form.)

9. Locality B 602: 6½ miles west of Pyramid Hills.

Collector: A.R. Jensen.

Specimens F 22030.

Indeterminate.

10. Locality B 660: 3½ miles south-east of Emu Plains Homestead.

Collector: A.R. Jensen.

Specimens F 22031.

Very poorly preserved.

Noeggerathiopsis hislopi (Bunb.) tentatively identified.

Age determination Permian - ? Lower Bowen.

11. Locality B 661: ½ mile south of B 660.

Collector: A.R. Jensen.

Specimens F 22032

A single leaf of Noeggerathiopsis hislopi (Bunb.) indicates Permian age - ? Lower Bowen.

12. Locality B 1207: In Coral Creek; 8 miles south-east of Collinsville.

Collector: V.R. Forbes.

Specimen F 22033.

A poorly preserved specimen is referred tentatively to Noeggerathiopsis hislopi (Bunb.).

Age determination Permian - ? Lower Bowen.



PLATE 2

North - East Bowen Basin Collection.

Figure 4: *Lepidodendron* sp.  
Specimen F 22026. Natural size.

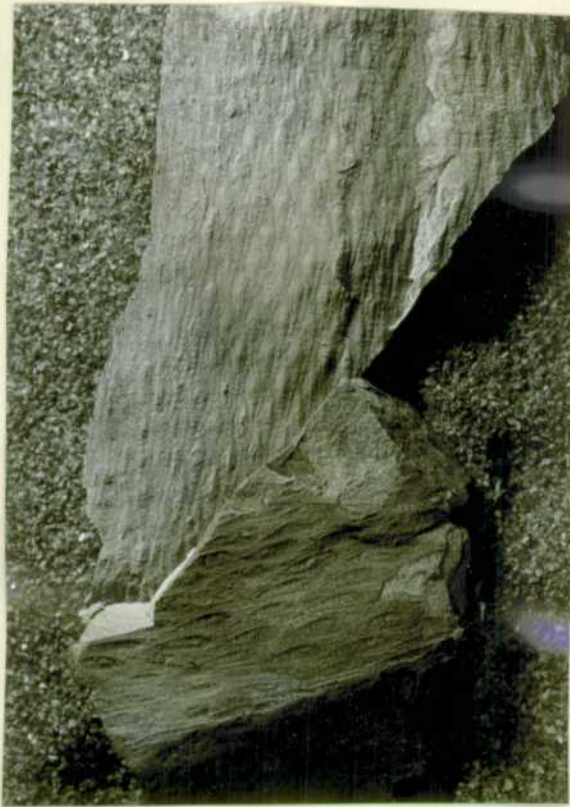
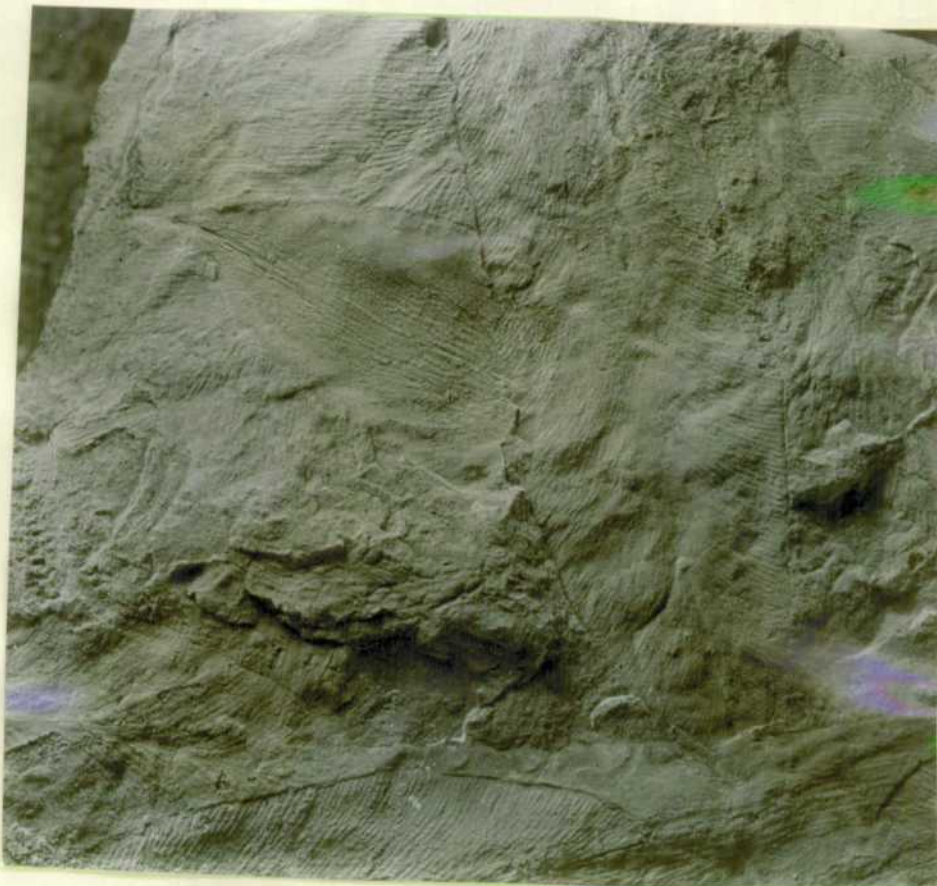


Figure 5: Scale Leaf, *Glossopteris* spp.  
Specimen F 22029. Magnification X 2.





13. Locality B 1000: 8 miles east of Mount Wyatt.

Collector : E.J. Malone

Specimens F 22039

Leptophloeum australe (M'Coy) is identified,  
indicating Upper Devonian age.

14. Locality B 90:  $\frac{1}{2}$  mile north-east of Mount Wyatt.

Collector : E.J. Malone

Specimens F 22040

A stem possibly of Psilophyte affinity indicates  
? Devonian age.

15. Locality B 610: Run 9, photo 5089.

Collector: A.R. Jensen.

Specimens F 22091

Indeterminate stems with marine fossils.

B. Mackay 4-mile Sheet:

16. Locality M 423: On Nebo - Eton Road, 3 miles north of  
Range Hotel.

Collector: V.R. Forbes.

Specimens F 22034 - 22037

The following are identified:

- (a) Large seeds. Figure 6, Plate 3 illustrates specimen F 22035, and Figure 7, Plate 3 illustrates a base and an apex of two slightly smaller seeds. The measurements of the largest are 3.25 cm. long, greatest width 2.5 cm.. The two smaller examples are within the size range given for Samaropsis dawsoni (Shirley). The larger example differs in no significant way and no useful purpose could be served by giving it a different specific name.
- (b) Noeggerathiopsis hislopi (Bunb.) Figure 8, Plate 3 illustrates specimen F 22036.
- (c) Vertebraria indica Royle. Specimen F 22037.

Age determination - Permian. Lower Bowen ?.

17. Locality M 446: On Blackwaterhole Creek,  $2\frac{1}{2}$  miles  
north-east of Range Hotel.

Collector: V.R. Forbes

Specimens F 22038

Glossopteris indica Sch. is associated with  
Equisetalean stems.

Age determination - Permian.

PLATE 3

North - East Bowen Basin Collection

Figure 6: Samaropsis dawsoni (Shirley)  
Specimen F 22035. Natural size.



Figure 7: Samaropsis dawsoni (Shirley)  
Natural size. F 22035.

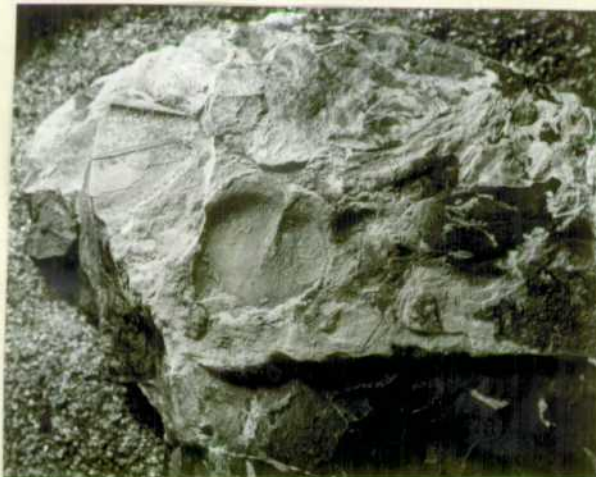
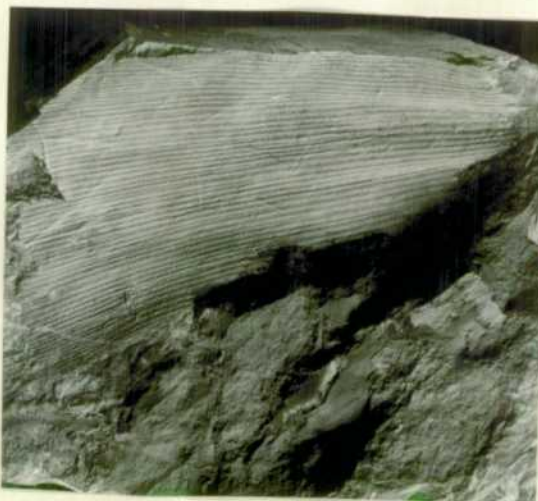


Figure 8: Noeggerathiopsis hislopi (Bunb.)  
Specimen F 22036. Natural size.



## II. COLLECTIONS from the EMERALD 4-mile Area, Queensland.

Plant fossils were collected from 16 localities in the Emerald 4-mile sheet area in 1961.

Details of localities and plants identified are as follows:-

1. Locality EM 17/7: Run 7, photo 74.

Ducabrook Formation  
Specimens F 22058

- (a) Stigmara ficoides Bgt. Root buttress of a Lepidodendroid plant.
- (b) Branching Lepidodendroid stem. Immature, with closely crowded leaf bases. Could be Lepidodendron, Protolopodendron or even Leptophloeum.
- (c) Decorticated lepidodendroid stem.

Age determination, on presence of a lepidodendroid plant (genus indeterminate) - Devonian or Carboniferous.

2. Locality EM 26/5: Run 8, photo 25.

Telemon Formation  
Specimens F 22059.

Leptophloeum australe (M'Coy)

Age determination - Upper Devonian.

3. Locality 26/10: Run 8, photo 8.

Telemon Formation  
Specimens F 22059

Leptophloeum australe (M'Coy)

Age determination - Upper Devonian.

4. Locality SP. 54/5:

Specimen F 22089.

Decorticated Lepidodendroid stem, genus indeterminate.

Age determination: Upper Devonian or Carboniferous.

5. Locality 308/1: Run 1, Photo 15.

Permian shale.  
Specimens F 22061.

Poor specimens containing fragments of leaves with reticulated venation of Glossopteris or Gangamopteris type. No generic identification possible.

Age determination; Permian.

6. Locality 347/1: Run 3, photo 84.  
Permian shale.  
Specimens F 22062

The following are identified:-

Glossopteris indica Sch.  
Glossopteris communis Feist.  
Gangamopteris cyclopteroides Feist.

Age determination: Lower Permian.

7. Locality 347/5: Run 3, photo 84.  
Permian shale.  
Specimens F 22063

Very large leaves of Glossopteris indica Sch.  
are present with a fragment of ? Gangamopteris

Age determination: Permian - ? Lower Permian.

8. Locality 349/5: Run 7, photo 43.  
Ducabrook Formation  
Specimens F 22064

Equisetalean stems are associated with a  
Lepidodendron cf. L. veltheimianum Stbg.

Age determination: Lower Carboniferous.

9. Locality 349/10: Run 7, photo 43.  
Joe Joe Formation  
Specimens F 22065.

Equisetalean stems associated with  
decorticated Lepidodendron sp.

Age determination: Lower Carboniferous

10. Locality 355/5: Run 9, photo 32.

Telemon Formation  
Specimens F 22066

Leptophloeum australe (M'Coy)

Age determination : Upper Devonian.

11. Locality 26/5a:

Specimens F 22068  
Leptophloeum australe (M'Coy)

Age determination: Upper Devonian.



12. Locality 26/8: Run 8, photo 25.

Telemon Formation.

Specimens F 22069, 22070.

- (a) Leptophloeum australe (M'Coy). Stems of all sizes as impressions and casts, some decorticated.
- (b) Equisetalean stems.
- (c) Specimen F 22070, illustrated in Figure 9, Plate 4, shows what appears to be part of a cone with overlapping sporophylls. This may be part of a cone of Leptophloeum australe (M'Coy).

Age determination: Upper Devonian.

13. Locality 32/1: Run 8, photo 25.

Telemon Formation

Specimens F 22071.

Leptophloeum australe (M'Coy)

Age : Upper Devonian

14. Locality 36/2: Run, photo 25.

Telemon Formation.

Specimens F 22072 (bulk of collection),  
F 22073 - 22077.

Leptophloeum australe (M'Coy) is present in these specimens. It shows a remarkably interesting range of forms. As well as the typical range of decorticated forms of normal stems, there are examples showing crowding of leaf bases in zones such as is described by Dawson (1862) for Leptophloeum rhombicum Daws. These specimens make the identity of L. australe and L. rhombicum almost certain. It was the absence of such forms in Australian specimens which made a separate species necessary.

Figure 10, Plate 4, of specimen F 22073 shows a normal stem, slightly decorticated.

Figure 11, Plate 4, of specimen 22074, illustrates a small stem with the leaf bases closely crowded and horizontal wrinkling.

Figure 12, Plate 4, of specimen F 22075 illustrates a large stem with zones of wrinkling and crowding of leaf bases.

Figure 13, Plate 5, shows a large frond-like organ (Specimen F 22076). Along its centre is a knobbly core which was apparently woody. The frond portion on either side is horizontally ridged into equal width corrugations (? segments). A further frond layer at a different angle to the core is visible in the side of the specimen.

PLATE 4.

EMERALD 4-mile Area.

Leptophloeum australe (M'Coy)

Figure 9. Specimen F22070  
Part of Cone?. Nat.size.



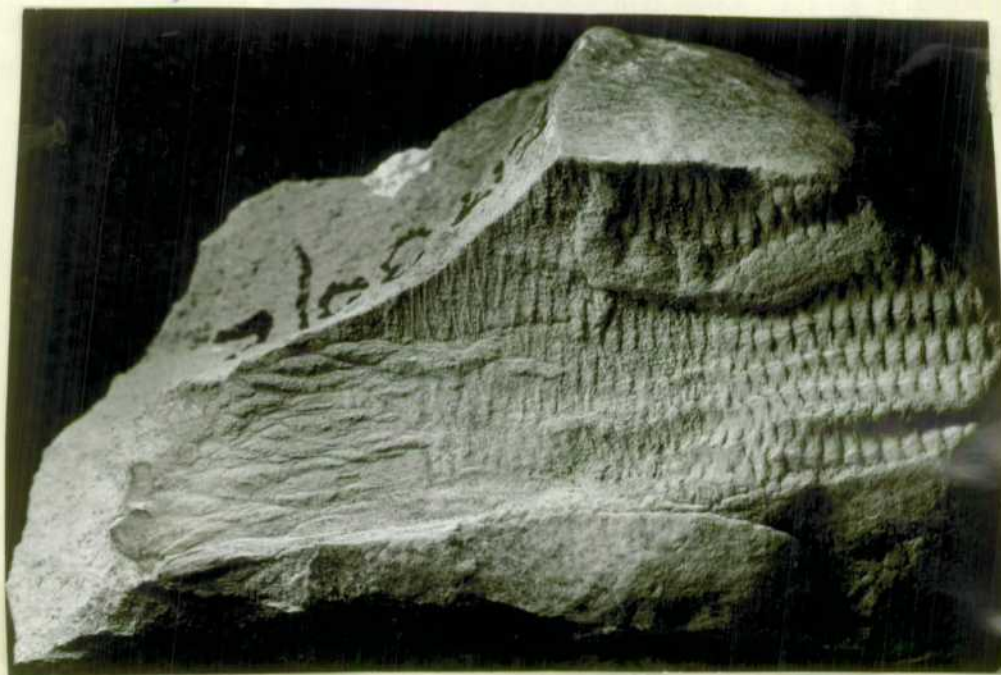
Figure 10. Decorticated normal  
stem. Natural size. F22073.



Figure 11. Young stem, crowded bases, Magnification X2.  
F22074.



Figure 12. Stem with zones of wrinkled, crowded bases  
F22075.



The nature of this specimen is by no means clear. I believe it represents a branch of Leptophloeum australe which had leaves attached to its leaf bases in "bottle-brush" fashion all round. On compression into a partially two-dimensional form the leaves appear as the corrugated frond.

Figure 14, Plate 5, of specimen F 22077 illustrates another problematical fossil. It appears to be a cone of loose sporophylls (?paired) borne on a stem. Whether it belongs to Leptophloeum australe or not is unknown.

15. Locality 24/5.

Specimen F 22078  
Stigmaria ficoides Bgt.

Age: Upper Devonian or Carboniferous.

16. Locality 234/1.

Specimens F 22079.

Numerous leaves of Glossopteris. These are narrow, and taper steeply from their widest part just below the apex to their petioles. They appear to be closer to G. intermittens Fm. than to G. angustifolia Bgt.

Age determination : Permian.



PLATE 5.

Emerald 4-mile area.

Figure 13: Specimen F 22076  
Frond-like organ. Natural size.

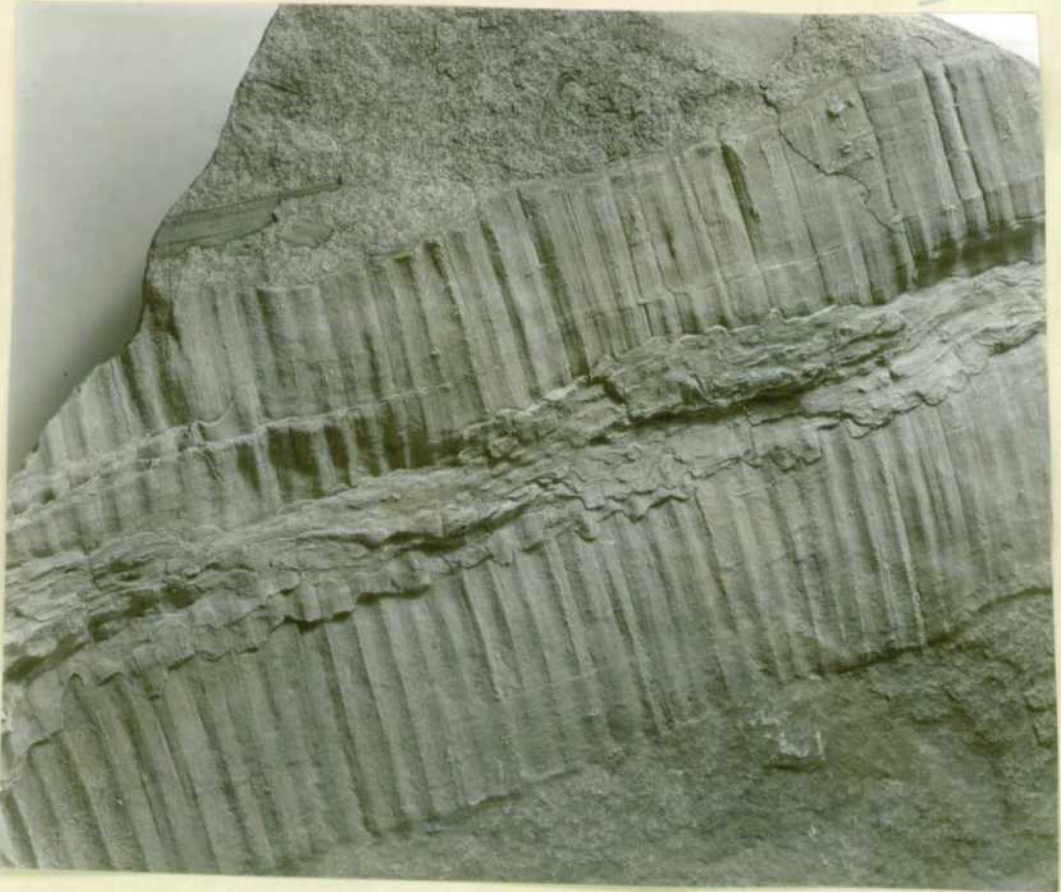
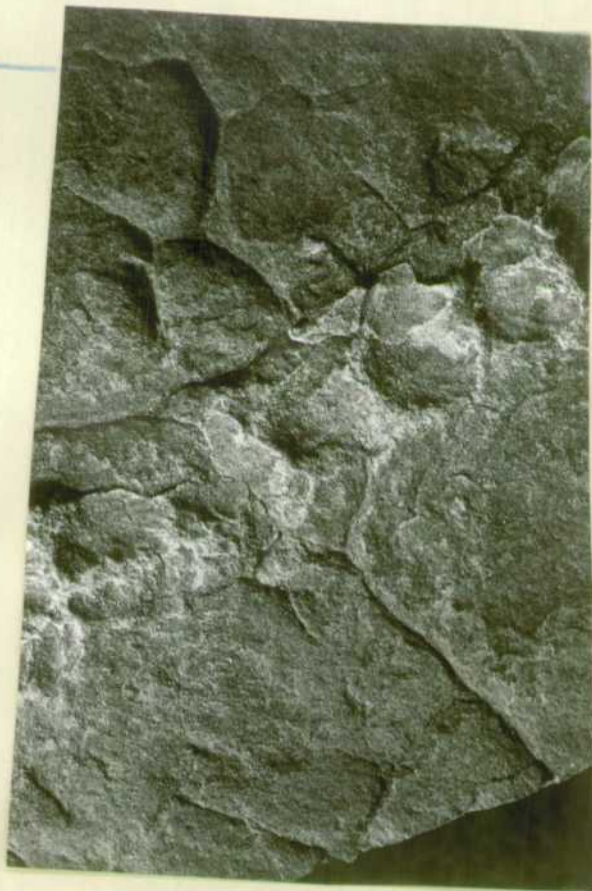


Figure 14: Cone?. Specimen F 22077. Magnification X2





### III. Collection from the Great Artesian Basin, Queensland.

Plant fossils were collected at thirteen localities on the western margin of the Great Artesian Basin in 1961. The fossils are mainly poorly preserved and indeterminate.

Details of localities and identifications are as follows:-

1. Locality GAB 600: Mackunda 4-mile Sheet.

Mackunda Beds.

Specimens F 22041.

Small scale leaves of Cycadolepis type occur with indeterminate plant fragments. These indicate Jurassic of Lower Cretaceous age.

2. Locality GAB 613: Mackunda 4-mile Sheet.

Winton Formation.

Specimens F 22042 - 22045

(a) A single pinnule of the fern Sphenopteris burrumensis Walk. indicates Lower Cretaceous age. Figure 15 shows the pinnule, magnified X3.

Figure 15.

Sphenopteris burrumensis Walk.

Magn. X 3

Specimen F 22043



(b) Partially petrified stems. F 22044.

(c) Cycadolepis type scale attached to a stem F 22045.

(d) Indeterminate fragments.

Age determination : Lower Cretaceous.

3. Locality GAB 614. Mackunda 4-mile Sheet.

Winton Formation

Specimen F 22046.

This specimen is composed of closely packed, macerated plant remains. None of the fragments are determinate.

4. Locality GAB 622. Mackunda 4-mile Sheet.

Mackunda Beds.

Specimens F 22047.

Indeterminate plant fragments.

5. Locality GAB 627: Mackunda 4-mile Sheet.

Winton Formation

Specimens F 22048

A segment of petrified tree trunk.

Sectioning of this wood might allow determination of its affinities, but the highly conservative nature of wood structure makes it almost valueless for close age determination.

6. Locality GAB 634:Mackunda 4-mile Sheet.

Mackunda Beds.

Specimen F 22049.

Fossil wood. Age indeterminate.

7. Locality GAB 637. Mackunda 4-mile sheet.

Winton Formation.

Specimens F 22050

The following plant fragments are present:-

(a) Small conifer twigs.

(b) Small pieces of Dicotyledonous leaf, with pronounced midrib, alternate side veins.

(c) Scale of Cycadolepis type.

An age determination of Cretaceous or younger can be made on the presence of the Dicotyledonous leaf fragment.

8. Locality GAB 657. McKinlay 4-mile Sheet.

Winton Formation.

Specimens F 22051.

Indeterminate stems.

9. Locality GAB 659. McKinlay 4-mile Sheet.

Winton Formation.

Specimens F 22052

Equisetalean stem fragments

Age indeterminate.

10. Locality GAB 704. Brighton Downs 4-mile Sheet.

Winton Formation.

Specimens F 22053

Indeterminate plant remains.

11. Locality GAB 705. Brighton Downs 4-mile Sheet.

Winton Formation.

Specimens F 22054, F 22055.

These specimens are soft mudstone which is disintegrating rapidly. They contain conifer stems of Pagiophyllum type, indicating Mesozoic age.

12. Locality GAB 711. Brighton Downs 4-mile Sheet.

Winton Formation.

Specimens F 22056.

Indeterminate stem casts.

13. Locality GAB 746. Brighton Downs 4-mile Sheet.

Winton Formation.

Specimens F 22057

Indeterminate.

Conclusions:

No age determination is possible for the Mackunda Beds.

A Lower Cretaceous age is suggested for the Winton Formation.

#### IV. Collections of Mesozoic Plants from the Northern Territory.

Plant fossils were collected at five localities by S.K. Skwarko, and at two localities by officers of the Land Research Division of the C.S.I.R.O..

1. Locality TT 54: About 9 miles south-west from Daly River crossing, on road to Dorisvale Homestead.  
Fergusson 4-mile; Hungry Knob 1-mile.  
Specimens F 22084.

Indeterminate stems. Some may be partially petrified and could be sectioned, but would not assist in age determination.

2. Locality TT 55: Both sides of a creek, on the western edge of Yiyinti Range, 20 miles north-north-east of Rosey Creek; Run 7, ph.5191, pt. 8, Mount Young 4-mile  
Specimens F 22085.

Indeterminate stem impressions and casts.

3. Locality TT 59: About  $\frac{1}{2}$  mile south-west from Siegal's Creek Homestead, on cliffs on the west bank of Agnes Creek. Run 10, ph.W 5013, Pt. 1. Calvert Hills 4-mile.  
Specimens F 22086.

The following are identified:-

Microphyllopteris gleichenioides O. & M.

Otozamites bechei Brong.

Conifer foliage.

Conifer twigs, Pagiophyllum type.

Age determination; Lower Cretaceous.

4. Locality TT 60: About 12 miles east from Siegal's Creek Homestead. Run 11, Ph. 5093, pt.2. Calvert Hills 4-mile.  
Specimens F 22087.  
Cladophlebis australis (Morr.)  
Brachyphyllum type conifer stems.

Cladophlebis australis is a most characteristic plant of the Jurassic of Australia and persists into Burrum and Styx River Series in Queensland (Lower Cretaceous). The upward limit of the species is not known.

5. Locality TT 61: North side of the Calvert Hills - Wollogorang Road, about 30 miles from Calvert Hills Homestead. Run 3, ph.5113 pt.3.



5. Locality TT 61:(cont.)

Specimens F 22088.

Conifer fragments.

Mesozoic age.

6. Locality Land Research 1: About 1 mile south-east of Wongalla Lagoon adjacent to King River. 32 miles south-south-east of Katherine. King River Run 4/241.

Specimens F.22089.

Numerous impressions of Conifer foliage of Elatocladus type are present. Such foliage is very common in Jurassic and Lower Cretaceous strata

7. Locality Land Research 2: Margin of Katherine River flood plain, about 1/3 mile east of river, 6 miles downstream from Chinaman Creek junction. 19 miles south-west of Katherine. Manbulloo 3A/5095.

Specimens F 22090.

Elatocladus planus type conifer foliageBrachyphyllum type conifer twigs.Sphenopteris erecta (Ten.Woods).

Sphenopteris erecta is characteristic of the Burrum Series in Queensland and indicates Lower Cretaceous age for the fossil horizon.

V. Permian Plant Remains from Mount Rymill, Antarctica.

Plant fossils were collected by R. Ruker from a moraine at the foot of Mount Rymill at approximately Lat. 73°01'S, Long. 65°52' E. The plant remains are preserved in a fine, red marl whose place of origin is unknown.

Specimens F 22080 - 22083

Numerous examples of Vertebraria indica Royle are present, but only one example of leaves. These are referable to Glossopteris communis Feist and they are similar to Upper Permian examples of the species from Upper Bowen in Australia.

Figure 16, Plate 6, shows the leaves, Figures 17 and 18, Plate 6 show Vertebraria indica Royle.

A Permian age is indicated for the specimens.

VI. Fossiliferous Sample from the Tarlton Formation, N.T.

Sample HR 105.

Specimens containing fragmentary plant fossils were collected from Tarlton Formation at a locality on the Hay River 4-mile Sheet 6 miles south-south-west from Red Heart Bore (Run 1. ph. 5031, pt.H.R.105) by K.G. Smith in 1961. The plant-bearing beds were recorded as being "horizontal beds, capping Upper Proterozoic sediments on small mesas."

Repeated splitting of the specimens and exhaustive examination has failed to reveal any determinate fossil. No determination of age is possible. (specimens F 22013).

VII. Sample from the Clarke River 4-mile Area, Queensland.

Sample 1/CR/8/5038. Collector: C.D. Branch.

Specimens F 22014.

Preservation of the specimens is poor. Some stem impressions show features of decorticated Lepidodendron or Protolepidodendron. No close identification is possible. Upper Devonian or Carboniferous age is indicated.

PLATE 6.

Antarctic Plant Fossils.

Figure 16. Glossopteris communis Feist.  
Specimen F 22080 Natural size.

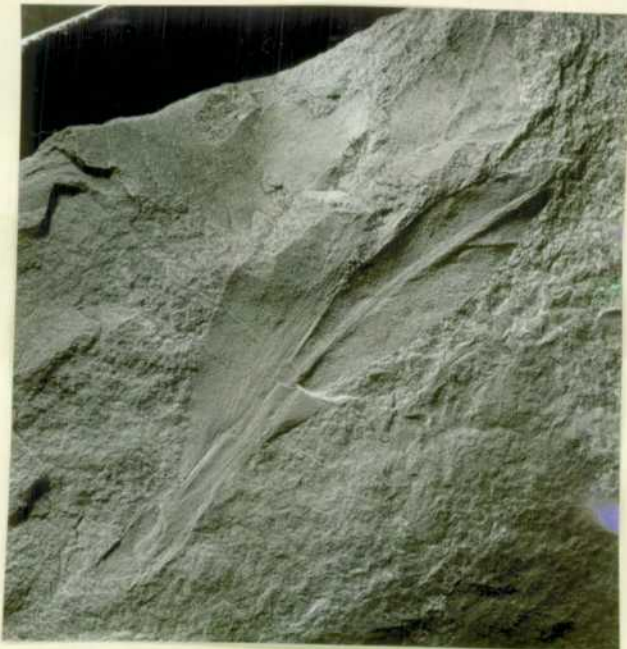
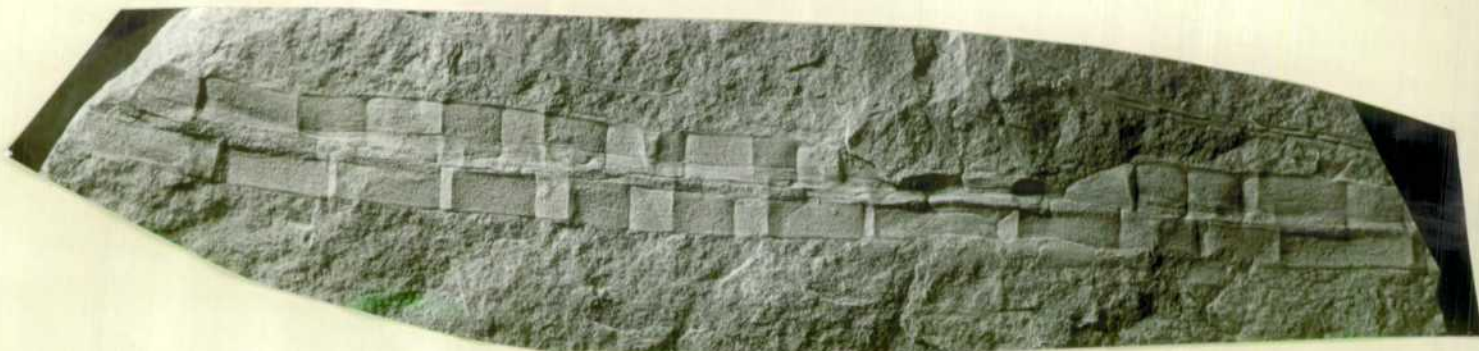


Figure 17. Vertebraria indica Royle  
Specimen F 22082. Natural size.



Figure 18. Vertebraria indica Royle.  
Specimen F 22081. Natural size.



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